APPENDIX D

COSTS AND ENVIRONMENTAL IMPACTS

COSTS AND ENVIRONMENTAL IMPACTS

A. ECONOMIC IMPACTS

1. Demand

The proposed oxygenated gasoline program for California requires that gasoline sold during the CO control period to contain between 1.8 and 2.2 percent by weight oxygen. The total projected demand for oxygenates to meet the proposed oxygenated gasoline program will depend on a number of factors. These factors include:

- o CO regulatory control period
- o Projected total gasoline consumption during the CO control period
- o Oxygenate requirements
- o Spillover (i.e., use of oxygenated gasoline outside of control periods)
- o Current oxygenate demands
- o Potential for EPA waivers

Regulatory Control Period

The CO regulatory control period for the different air basins in California vary with the CO exceedance history of each basin. Except for the South Coast air basin which has a control period of six months (September through March), the length of the control period for the remaining air basins is four months. For most of these basins, the control period is from October through January, but two of these basins have a control period from November through February. Staff uses a four month control period for all the air basins in evaluating the potential impacts of the proposed oxygenate program.

Projected Gasoline Consumption during the CO Control Periods

Projected daily gasoline consumption for each of the air basins is shown in Table 1 for the years 1992, 1994, and 1996. Estimates of total gasoline consumption for each basin are made by multiplying the daily estimated gasoline usage for each basin by the total number of days in the regulatory control period for each air basin. The total projected gasoline demand for the CO season is shown in Table 2.

Projected Oxygenate Demand

The oxygenate demand depends on the projected gasoline usage for the CO control period, the regulatory requirement for the oxygen content of gasoline, and the type of oxygenate used. Using the requirement of an average of 2 percent by weight oxygen content for the oxygenated gasoline, staff estimated the total oxygenate demand for various combinations of methyl t-butyl ether (MTBE) and ethanol and are shown in Tables 3, 4, and 5. For a 75 percent MTBE and 25 percent ethanol combination, the estimated oxygenate demand is 350 million gallons of MTBE and 60 million gallons of ethanol as shown in Table 4.

TABLE 1
MOTOR VEHICLE DAILY GASOLINE USAGE
(1000 GAL/DAY)

	1992	1994	1996
North Coast	4.2E+02	4.2E+02	4.2E+02
San Francisco Bay Area	7.2E+03	7.1E+03	7.0E+03
North Central Coast	7.6E+02	7.5E+02	7.5E+02
South Central Coast	1.5E+03	1.5E+03	1.5E+03
South Coast	1.4E+04	1.4E+04	1.4E+04
San Diego	3.2E+03	3.3E+03	3.4E+03
Northeast Plateau	2.0E+02	2.1E+02	2.1E+02
Sacramento Valley	2.8E+03	2.8E+03	2.8E+03
San Joaquin Valley	3.4E+03	3.4E+03	3.4E+03
Great Basin Valleys	1.3E+02	1.3E+02	1.3E+02
Southeast Desert	1.5E+03	1.5E+03	1.6E+03
Mountain Counties	6.0E+02	6.2E+02	6.3E+02
Lake County	6.4E+01	6.6E+01	6.7E+01
Lake Tahoe	6.5E+01	6.1E+01	5.9E+01
TOTAL STATEWIDE DAILY	3.5E+04	3.6E+04	3.6E+04
TOTAL STATEWIDE ANNU	1.3E+07	1.3E+07	1.3E+07

TABLE 2
MOTOR VEHICLE CO SEASON GASOLINE USAGE
(1000 GAL/DAY)

	1992	1994	1996
North Coast	5.1E+04	5.1E+04	5.1E+04
San Francisco Bay Area	8.6E+05	8.5E+05	8.5E+05
North Central Coast	9.1E+04	9.0E+04	8.9E+04
South Central Coast	1.8E+05	1.8E+05	1.8E+05
South Coast	1.6E+06	1.7E+06	1.7E+06
San Diego	3.9E+05	4.0E+05	4.1E+05
Northeast Plateau	2.5E+04	2.5E+04	2.5E+04
Sacramento Valley	3.3E+05	3.3E+05	3.4E+05
San Joaquin Valley	4.0E+05	4.0E+05	4.1E+05
Great Basin Valleys	1.6E+04	1.6E+04	1.6E+04
Southeast Desert	1.8E+05	1.8E+05	1.9E+05
Mountain Counties	7.1E+04	7.4E+04	7.6E+04
Lake County	7.6E+03	7.9E+03	8.0E+03
Lake Tahoe	7.8E+03	7.3E+03	7.1E+03
TOTAL STATEWIDE CO SE	4.3E+06	4.3E+06	4.3E+06

TABLE 3

ESTIMATED MOTOR VEHICLE CO SEASON OXYGENATE USAGE
SCENARIO 1: 100% MTBE
(1000 GAL/CO SEASON)

	1992		1994		1996	
	MTBE	ETHAN	MTBE	ETHAN	MTBE	ETHAN
North Coast	5.6E+03	0.0E+00	5.6E+03	0.0E+00	5.6E+03	0.0E+00
San Francisco Bay Area	9.5E+04	0.0E+00	9.4E+04	0.0E+00	9.3E+04	0.0E+00
North Central Coast	1.0E+04	0.0E+00	9.9E+03	0.0E+00	9.8E+03	0.0E+00
South Central Coast	2.0E+04	0.0E+00	2.0E+04	0.0E+00	1.9E+04	0.0E+00
South Coast	1.8E+05	0.0E+00	1.8E+05	0.0E+00	1.8E+05	0.0E+00
San Diego	4.3E+04	0.0E+00	4.4E+04	0.0E+00	4.5E+04	0.0E+00
Northeast Plateau	2.7E+03	0.0E+00	2.7E+03	0.0E+00	2.7E+03	0.0E+00
Sacramento Valley	3.7E+04	0.0E+00	3.7E+04	0.0E+00	3.7E+04	0.0E+00
San Joaquin Valley	4.4E+04	0.0E+00	4.4E+04	0.0E+00	4.5E+04	0.0E+00
Great Basin Valleys	1.7E+03	0.0E+00	1.8E+03	0.0E+00	1.8E+03	0.0E+00
Southeast Desert	1.9E+04	0.0E+00	2.0E+04	0.0E+00	2.1E+04	0.0E+00
Mountain Counties	7.9E+03	0.0E+00	8.1E+03	0.0E+00	8.4E+03	0.0E+00
Lake County	8.4E+02	0.0E+00	8.7E+02	0.0E+00	8.8E+02	0.0E+00
Lake Tahoe	8.5E+02	0.0E+00	8.1E+02	0.0E+00	7.8E+02	0.0E+00
TOTAL STATEWIDE CO SE	4.7E+05	0.0E+00	4.7E+05	0.0E+00	4.7E+05	0.0E+00

TABLE 4
ESTIMATED MOTOR VEHICLE CO SEASON OXYGENATE USAGE
SCENARIO 2: 75% MTBE AND 25% ETHANOL
(1000 GAL/CO SEASON)

	1992		1994		1996	
	MTBE	ETHAN	MTBE	ETHAN	MTBE	ETHAN
North Coast	4.2E+03	7.2E+02	4.2E+03	7.3E+02	4.2E+03	7.3E+02
San Francisco Bay Area	7.1E+04	1.2E+04	7.0E+04	1.2E+04	7.0E+04	1.2E+04
North Central Coast	7.5E+03	1.3E+03	7.4E+03	1.3E+03	7.4E+03	1.3E+03
South Central Coast	1.5E+04	2.5E+03	1.5E+04	2.5E+03	1.5E+04	2.5E+03
South Coast	1.4E+05	2.3E+04	1.4E+05	2.4E+04	1.4E+05	2.4E+04
San Diego	3.2E+04	5.6E+03	3.3E+04	5.7E+03	3.4E+04	5.8E+03
Northeast Plateau	2.0E+03	3.5E+02	2.0E+03	3.5E+02	2.0E+03	3.5E+02
Sacramento Valley	2.7E+04	4.7E+03	2.8E+04	4.8E+03	2.8E+04	4.8E+03
San Joaquin Valley	3.3E+04	5.7E+03	3.3E+04	5.8E+03	3.4E+04	5.8E+03
Great Basin Valleys	1.3E+03	2.3E+02	1.3E+03	2.3E+02	1.3E+03	2.3E+02
Southeast Desert	1.5E+04	2.5E+03	1.5E+04	2.6E+03	1.5E+04	2.7E+03
Mountain Counties	5.9E+03	1.0E+03	6.1E+03	1.1E+03	6.3E+03	1.1E+03
Lake County	6.3E+02	1.1E+02	6.5E+02	1.1E+02	6.6E+02	1.1E+02
Lake Tahoe	6.4E+02	1.1E+02	6.1E+02	1.0E+02	5.9E+02	1.0E+02
TOTAL STATEWIDE CO SE	3.5E+05	6.1E+04	3.5E+05	6.1E+04	3.6E+05	6.1E+04

TABLE 5
ESTIMATED MOTOR VEHICLE CO SEASON OXYGENATE USAGE
SCENARIO 3: 50% MTBE AND 50 ETHANOL
(1000 GAL/CO SEASON)

	1992		1994		1996	
	MTBE	ETHAN	MTBE	ETHAN	MTBE	ETHAN
North Coast	2.8E+03	1.4E+03	2.8E+03	1.5E+03	2.8E+03	1.5E+03
San Francisco Bay Area	4.7E+04	2.5E+04	4.7E+04	2.4E+04	4.7E+04	2.4E+04
North Central Coast	5.0E+03	2.6E+03	5.0E+03	2.6E+03	4.9E+03	2.5E+03
South Central Coast	9.8E+03	5.1E+03	9.8E+03	5.1E+03	9.7E+03	5.0E+03
South Coast	9.0E+04	4.7E+04	9.1E+04	4.7E+04	9.2E+04	4.8E+04
San Diego	2.1E+04	1.1E+04	2.2E+04	1.1E+04	2.2E+04	1.2E+04
Northeast Plateau	1.3E+03	7.0E+02	1.4E+03	7.0E+02	1.4E+03	7.1E+02
Sacramento Valley	1.8E+04	9.5E+03	1.8E+04	9.5E+03	1.9E+04	9.6E+03
San Joaquin Valley	2.2E+04	1.1E+04	2.2E+04	1.2E+04	2.2E+04	1.2E+04
Great Basin Valleys	8.7E+02	4.5E+02	8.8E+02	4.6E+02	8.9E+02	4.6E+02
Southeast Desert	9.7E+03	5.0E+03	1.00E+04	5.2E+03	1.0E+04	5.3E+03
Mountain Counties	3.9E+03	2.0E+03	4.1E+03	2.1E+03	4.2E+03	2.2E+03
Lake County	4.2E+02	2.2E+02	4.4E+02	2.3E+02	4.4E+02	2.3E+02
Lake Tahoe	4.3E+02	2.2E+02	4.0E+02	2.1E+02	3.9E+02	2.0E+02
TOTAL STATEWIDE CO SE	2.3E+05	1.2E+05	2.4E+05	1.2E+05	2.4E+05	1.2E+05

Spillover

Spillover refers to the use of oxygenated gasoline in attainment areas, (i.e., areas that are not required to use oxygenated gasoline), due to logistical problems such as storage and distribution. In California, the additional demand for oxygenates due to the spillover effects is minimal since no air basin is exempted from the oxygenated gasoline requirement. Some spillover may exist due to slight differences in the length and time of the CO control periods between the different air basins. For example, the CO control period for the San Diego Air Basin is from November to February whereas the CO control period for the Southeast Desert Air Basin is from October to January and the CO control period for the South Coast Air Basin is from September to March. Staff assumes there would be no significant effects on oxygenate demand due to spillover.

Current Oxygenate Demands

Oxygenates (MTBE and ethanol) are presently being blended in gasoline for use in California, although not for the same reasons as those of the proposed oxygenated gasoline program. MTBE is chiefly being used as an octane enhancer while usage of ethanol in gasoline is motivated by economic incentives of tax exemption and credit. First, there is a tax exemption of $0.054 per gallon of gasoline. This exemption applies only to blends of at least 10 percent by volume ethanol. The other incentive is a blender's income tax credit of $0.54 per gallon of ethanol for motor vehicle fuels. If industry continues the practice of using MTBE and ethanol in this manner for the CO non-regulated summer months, then the total annual demand for oxygenates will increase over that projected for the CO control period. Staff estimates no major problem with meeting the demand for oxygenates during the summer months since for those non-control periods, the supply of oxygenates is sufficient to meet those demands.

EPA Waiver

The federal CAA specifies requirements and EPA has developed guidelines regarding oxygenated gasoline. Deviations from these standards will require states to petition for a waiver. The staff proposal would require use of oxygen at levels less than the CAA requirement of 2.7 percent by weight. California will need to apply for a waiver from the oxygen level requirement. If California's petition for a waiver is unsuccessful, demand for oxygenates will increase due to the additional oxygenates that is required by the federal program.

2. Supply

The increase in demand for oxygenates, particularly in the CO control period, raises the issue of whether there is an adequate supply of oxygenates to satisfy the requirements of the proposed oxygenated gasoline program. The supply of oxygenates is affected by several factors which include:

- Current capacity
- Expansion capacity

- o Nameplate capacity
- o Storage
- o Oxygen credit use

a. MTBE

California is not a large producer of MTBE. It has traditionally produced sufficient quantities of MTBE to satisfy its demand for use of MTBE as an octane enhancer. Current production of MTBE in California is at 4,500 barrels/day (bbl/d) from two plants. Another plant currently under construction with a capacity of 1,500 bbl/d is scheduled for completion at the end of 1991. Five other plants are being planned, with a high probability of being constructed. These plants will have a total combined capacity of 10,400 bbl/d. Thus, it is feasible that the total available supply of MTBE produced in California for the 1992/93 CO control period will be about 17,200 bbl/d [1]. However, actual production capability will likely be lower than the design capacity stated above. About 15 percent of capacity is estimated for downtime due to maintenance and process shutdown. Using this information, the actual production of MTBE is estimated to be about 14,600 bbl/d and is shown in Table 6.

California's annual capability for MTBE production is estimated to be about 1.8 million barrels during the CO control period. Based on staff's estimated oxygenate demand during the CO control period California will need to import about 6.5 million barrels of MTBE for the 1992/93 CO control period. This assumes MTBE is used for 75 percent of the oxygen of the oxygenate requirements. Currently, California has an inventory of about 4 million barrels of MTBE in storage [2]. This reduces the additional amount of MTBE that need to be imported for the 1992/93 control period to about 2.5 million barrels. Since the demand for oxygenate is greatest during the CO control period and much less during the summer months, storage capacity also needs to be addressed to handle the added load. Imports of MTBE for California could come from various sources, principally from the Gulf Coast states of Texas and Louisiana which have the largest production of MTBE in the U.S.. Other potential sources of MTBE could come from Canada or overseas suppliers such as Argentina, Brazil, Saudi Arabia, Singapore, and Malaysia.

b. Ethanol

Another oxygenate that is likely needed to satisfy the requirements of the proposed oxygenate program is ethanol (ethanol). California has no significant commercial production of ethanol. Staff estimates that California annual production of ethanol is about 7 million gallons (170,000 barrels). Most of the nation's supply of ethanol comes from the Midwest states. California's ethanol supply would therefore, most likely be transported by rail from that region. If 25 percent and 50 percent of the total oxygen requirement are met by using ethanol, the required amounts of ethanol are about 1.5 and 2.9 million barrels, respectively, for the 1992/93 CO control period. Staff assumes that all of the ethanol demand would be supplied from the Midwest.

TABLE 6

ESTIMATED CALIFORNIA MTBE PRODUCTION
(BARRELS/DAY)

Company	Location	Capacity	Operational Year
Currently Operating			
ARCO	Watson	2,500	Present
Chevron	El Segundo	2,000	Present
Under Construction			
Unocal	Wilmington	1,500	1991
Planned (Very Probable)			
Shell	Martinez	3,500	1992
Shell	Wilmington	1,100	1992
Exxon	Benicia	3,000	1993
Tosco	Martinez	2,200	1993
Mobil	Torrance	1,400	1993
Total Design Capacity		17,200	
Total Actual Capacity		14,600	

Source: DeWitt & Company Incorporated, World Wide MTBE Capacities, July 10, 1991.

Currently, California uses about 1 million barrels of ethanol annually for producing gasohol. Gasohol accounts for about 6 percent of the total gasoline sales in California. With the adoption of the proposed oxygenate program, in which a maximum oxygen content of gasoline is specified at 2.2 percent by weight, the tax exemption for blending ethanol will be eliminated for the months in the control period since ethanol has to be blended with a minimum concentration of 3.5 percent by weight in order to be eligible to receive the moor vehicle fuel tax exemption. Staff estimates that about 330,000 barrels of ethanol is available in the winter months if ethanol is switched from its current use in gasohol for use as an oxygenate. This reduces the estimated supply needs to about 1.0 and 2.4 million barrels, for scenarios of 25% and 50% ethanol as MTBE equivalent, respectively. Staff estimates that refiners will use relatively small percentage of ethanol to meet the requirements of the proposed oxygenate program due to the loss of the motor vehicle fuel tax exemption and due to the storage and handling of ethanol. In addition, staff assumes that 10 percent of the summer ethanol supply could be stored for winter use. Hence, California will probably need a supply of about 1 million additional barrels of ethanol for the 1992/93 CO control period.

The logistics for obtaining ethanol is more complex than that for MTBE. ethanol cannot be transported by pipeline as in the case for MTBE. Storage and blending of ethanol also encounter some difficulties due to its affinity for water thereby requiring blending on a request and supply basis. The normal practice is to splash blend ethanol into gasoline trucks immediately prior to delivery to retail sites. To ease somewhat on the demand for ethanol during the winter months, some summer supply of ethanol could be stored for use during the CO control period.

c. National Supply and Demand of MTBE and Ethanol

The EPA conducted a study to evaluate the impacts of its proposed oxygenate program on the nation's supply and demand of MTBE and ethanol. The EPA's minimum required oxygen content of gasoline is set at 2.7 percent by weight. This study assessed the amount of oxygenate (MTBE and ethanol) needed to meet the requirement for the over 40 non-attainment cities nationwide. Domestic production of MTBE and ethanol was estimated by EPA using a range from low to high capacity estimates. Estimated domestic capacity for MTBE and ethanol is shown in Table 7. Six scenarios were presented to estimate the demand and supply situation for various production and usage assumptions. EPA's analysis is summarized in Table 8. It can be seen from this table that there could be an oxygenate shortage for two of the scenarios and a surplus of oxygenate for the remaining four scenarios. Supply routes for oxygenates are shown in Figure 1. It is evident from this figure that California's increase demand for MTBE and ethanol can be met from the Midwest and the Gulf Coast.

3. Cost

Staff has estimated the cost of complying with the proposed oxygenate program assuming that MTBE will be used to meet 75 percent of the oxygen

Table 7

Low/Medium/High Estimates for
Combined Ethanol/MTBE Supply

COMBINE CAPACITY

Low Estimate	MTBE Low Est. MBBL/D	Ethanol Low Est. MTBEQ MBBL/D	Total Capacity MBBL/D
Total PADD V	10.5	1.11	11.61
Total PADD IV	4.0	1.33	5.33
Total PADD III	116.3	7.14	123.44
Total PADD II	13.3	124.25	137.55
Total PADD I	4.4	1.40	5.80
Total US	148.5	135.23	283.73

Medium Estimate	MTBE Med. Est. MBBL/D	Ethanol Med. Est. MTBEQ MBBL/D	Total Capacity MBBL/D
Total PADD V	12.0	1.21	13.21
Total PADD IV	4.0	1.57	5.57
Total PADD III	149.6	14.14	163.74
Total PADD II	17.0	138.13	155.13
Total PADD I	5.7	1.91	7.61
Total US	188.3	156.95	345.25

High Estimate	MTBE High Est. MBBL/D	Ethanol High Est. MTBEQ MBBL/D	Total Capacity MBBL/D
Total PADD V	13.5	1.30	14.80
Total PADD IV	4.0	1.81	5.81
Total PADD III	182.9	21.14	204.04
Total PADD II	20.7	152.01	172.71
Total PADD I	7.0	2.41	9,41
Total US	228.1	178.67	406.77

Source: U.S. Environmental Protection Agency

TABLE 8

SUMMARY OF U.S. SHORTFALL

VARIOUS SCENARIOS

(1000 BARRELS/DAY)

SCENARIOS*	DEMAND	CAPACITY	SHORTFALL
1	383.58	323.45	60.13
2	383.58	393.58	-10.00
3	383.58	463.71	-80.13
4	348.71	323.45	25.26
5	348.71	393.58	-44.87
6	348.71	463.71	-115.00

*Scenario 1: Low capacity estimate/10% spillover

Scenario 2: Medium capacity estimate/10% spillover

Scenario 3: High capacity estimate/10% spillover

Scenario 4: Low capacity estimate/no spillover

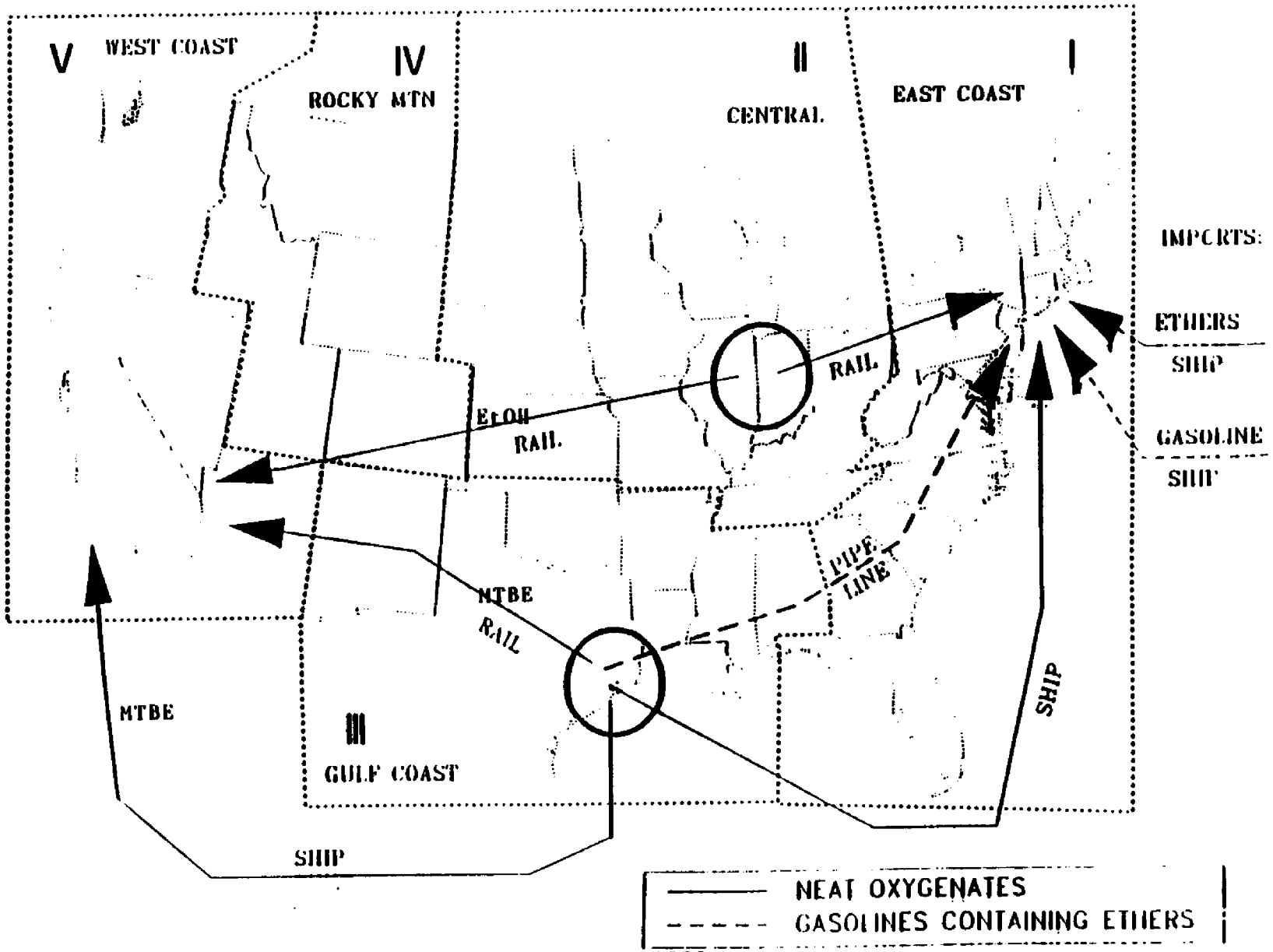
Scenario 5: Medium capacity estimate/no spillover

Scenario 6: High capacity estimate/no spillover

Source: U.S. Environmental Protection Agency.

FIGURE 1

OXYGENATE LOGISTICAL ROUTES BETWEEN PADD REGIONS



Source: Arco Chemical Company, September 11, 1990.

requirement and the remaining 25 percent will be met by using ethanol. Staff estimates that the additional import demand for MTBE and ethanol for the 1992/93 CO control period to be about 2.5 million barrels and 1.0 million barrels, respectively. The price of MTBE is estimated to be about $1.07/gallon [3] and for ethanol, the estimated price per gallon is about $1.22 [4]. Transport cost for supplying ethanol from the Midwest and MTBE from the Gulf Coast is estimated to be about $0.10/gallon. Therefore, total cost for supplying oxygenates to California is estimated to be about $1.17/gallon MTBE and $1.32/gallon ethanol.

Staff assumes the cost for the MTBE in current storage (4 million barrels) to be the same as the cost for imported MTBE. Using this assumption, the total quantity of MTBE needs to be imported is about 6.5 million barrels at a total cost of approximately $320 million. California's production of MTBE to meet the anticipated demand during the 1992/93 CO control period is estimated to be about 1.8 million barrels at a cost of approximately $80 million. Total cost for supplying the necessary amount of MTBE is therefore, estimated to be about $400 million. The cost to import 1.5 million barrels of ethanol is estimated to be about $83 million. In addition to the direct cost of buying ethanol there is an indirect cost due to the loss of the motor vehicle fuel tax exemption with the implementation of the proposed oxygenate program. The tax exemption for gasoline containing at least 10 percent by volume ethanol is $0.054/gallon gasohol. Thus, the tax exemption for ethanol when used as a 10 percent by volume (approximately 3.5 percent by weight) blend in gasoline is about $0.54/gallon ethanol. Approximately 330,000 million barrels of ethanol is currently being used to make gasohol for the winter months. The loss in revenue from the tax exemption for these months is estimated to be about $7.6 million. Thus, the cost to obtain sufficient amount of ethanol to meet the requirements of the proposed oxygenate program is estimated to be approximately $91 million.

A benefit resulting from the blending of oxygenate, particularly MTBE, is that it will extend the gasoline pool, and thus could help in reducing the demand for crude oil. Staff estimates that using 75% MTBE and 25% ethanol for the 1992/93 CO control period would reduce a demand of approximately 0.41 billion gallons (9.8 million barrels) of gasoline. Using a cost of $0.80/gallon gasoline, less state and federal taxes, staff estimates the savings resulting from this reduction in gasoline consumption to be about $329 million. Using these values, the total cost of the oxygenates is estimated to be about $162 million ($400 million for MTBE and $91 million for ethanol, less $329 million in gasoline savings). The cost per gallon of gasoline for the 1992/93 CO control period due to the oxygenate requirement is estimated to be about $0.038/gallon gasoline. This cost estimate excludes costs associated with possible increases in required storage capacity and those associated with distribution.

An additional indirect cost of oxygenated gasoline is a fuel economy penalty. EPA estimated the fuel economy for an 11 percent by volume of MTBE blend to be about $0.0074/gallon gasoline. However, oxygenates increase the octane number of gasoline. EPA calculated the savings to refiners from this increase in octane to be about $0.0148/gallon gasoline. Using these values,

staff estimates the cost of the proposed oxygenate program for the 1992/93 CO regulatory control period to be about $130 million or about 3 cents/gallon of gasoline. The above estimated costs of the proposed oxygenate program is shown in Table 9. Therefore, the cost effectiveness of the proposed program is about 50 cents per pound of CO reduced.

4. Small Business Impacts

Small businesses are defined by Government Code Section 11342 et seq. The Code requires the ARB to discuss how complying with a proposed regulation could adversely affect small business. Staff does not believe that adoption of the proposal would result in significant, adverse impacts on small businesses.

The Code explicitly excludes refiners from the definition of a small business. Some independently owned and operated gasoline service stations may be small businesses. Typically, this type of small business could own only 1 or 2 stations in order to meet the small business requirement of combined retail sales of less than $2 million per year. This annual sales figure corresponds to gasoline sales of about 160,000 gallons per month, if gasoline is the only retail product or service offered at the station(s). The average net sales at retail gasoline service stations in the U.S. were about $1.3 million per station in 1989.

Staff expects that any small businesses affected by the proposed oxygenate regulation would be able to pass any compliance expenses through to the consumers in the form of of higher product costs. In addition, small businesses affected by air pollution control regulations that are required to modify or install equipment can apply for long-term, low interest loans for $10,000-$500,000 from the State Department of Commerce - Office of Small Business (OSB) and the California Pollution Control Financing Authority. However, since no installation of any equipment is required by the proposed regulation, this course of action should not be necessary. In the view of the staff, the need to offer an oxygenated gasoline would not impose a significant hardship on small businesses.

B. POTENTIAL ENVIRONMENTAL IMPACTS

Staff believes that implementation of the proposed regulation would not result in substantial, adverse environmental impacts. Staff has not identified any adverse environmental or safety impacts due to the use of oxygenated gasoline that do not already exist with conventional gasoline. Staff believes that the potential safety hazards and negative environmental impacts associated with oxygenated gasoline are no greater than the potential adverse impacts associated with conventional gasoline that would otherwise be used. The production and use of oxygenated gasoline are not expected to increase emissions of greenhouse gases that may contribute to global warming or pollutants that may contribute to stratospheric ozone depletion. Use of oxygenated gasoline may actually decrease emissions of greenhouse gases.

TABLE 9

ESTIMATED COSTS OF CALIFORNIA OXYGENATE REQUIREMENTS
(1991 DOLLARS)

	($/gal gasoline)
Oxygenates Costs	+ $0.0377
Oxygenate Fuel Penalty	+ $0.0074
Octane Benefit	- $0.0148
Overall Cost	$0.0303

Source: U.S. Environmental Protection Agency
Air Resource Board staff

Footnotes

1. Dr. Roy Sugimoto (DeWitt & Company Incorporated), World Wide MTBE Capacities, July 10, 1991.

2. Personal communication with Dr. Roy Sugimoto on September 12, 1991.

3. DeWitt & Company Incorporated, MTBE/Oxygenates/New Fuels, No. 288, August 22, 1991.

4. New Fuels Report, Vol.12 No.29, July 22, 1991, p.13.